REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

In the specification, paragraphs 0017 and 0018 have been added and paragraph 0019 has been amended on page 3 of the substitute specification As a result of the new added paragraphs, the subsequent paragraphs were renumbered. No new matter has been added.

Claims 1, 2, 4, 5 and 7-10 are requested to be cancelled.

Claims 3 and 6 are currently being amended.

Claims 11 and 12 are being added.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 3, 6, 11 and 12 (4 claims) are now pending in this application.

On pages 1-4, specifically paragraphs 3 and 4 of the Office Action, the Examiner has objected to the drawings stating that Figures 1 and 2 fail to show the features of claims 1-10. Also, on pages 4-6, paragraphs 5 and 6 of the Office Action, the Examiner has rejected claims 1-10 under 35 U.S.C. § 112, first paragraph as failing to comply with the enablement requirement.

In response to the objection to the drawings and the rejection of the claims under §112, first paragraph, Applicants have canceled claims 1, 2, 4, 5, and 7-10. Applicants have amended independent claims 3 and 6. Applicants have also provided new Figures 3 and 4. Applicants submit that support for the amendments and the new figures are supported by the specification as originally filed and specifically on pages 4 and 5 of the substitute specification. Because of the added figures, Applicants have added paragraphs 0017 and

0018 which provide brief descriptions of the drawings and have amended paragraph 0019 which reference the new figures. No new matter has been added to this application since the drawings merely depict that which was originally filed with the application and the added paragraphs which merely describe the new figures. Applicants submit that the amended claims and the figures now specifically claim and disclose the invention.

Applicants have added new claim 11 which depends from independent claim 3 and claim 12 which depends from independent claim 6 which are also supported by the specification as originally filed.

Accordingly, Applicants respectfully request that the Examiner withdraw the objection to the figures and to the rejection of claims 3 and 6 under 35 U.S.C. §112, first paragraph.

On pages 6-12, paragraph 8, the Examiner has rejected claims 1-10 under 35 U.S.C. §102(b) as being anticipated by Perholtz, et al (USPN: 5,566,339). In response, Applicants submit that as to claims 1, 2, 4, 5, and 7-10, the Examiner's comments are moot. With respect to independent claims 3 and 6, as amended, Applicants submit that Perholtz does not anticipate that which is disclosed and claimed in the present application. Specifically, Perholtz only concerns one component, a workstation, in his system. In contrast, the present application assesses the whole computer system by monitoring all of the components of the computer system and determining if a function is available or would be available upon a change of status within the entire system.

Perholtz, (see col. 3, lines 50-54) is concerned with only a single workstation as opposed to monitoring a system function for availability and using that information when a change of state in the component of the computer system has taken place or is intended to take place to assess whether said change has taken place and results in a change in terms of the availability of said system function. Therefore, Perholtz does not anticipate that which is disclosed and claimed in the present application. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claims 3 and 6 under 35 U.S.C. §102(b).

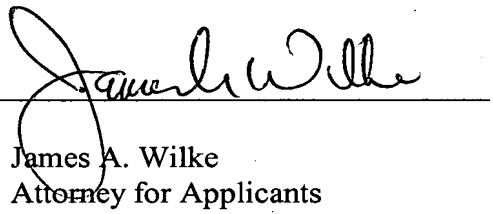
Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 06-1447. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 06-1447. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 06-1447.

Respectfully submitted,

Date 06-16-05

By 

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SUBSTITUTE SPECIFICATION
(Marked-up Version)

METHOD OF MONITORING FOR AVAILABILITY OF A SYSTEM FUNCTION IN A COMPUTER SYSTEM

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The invention relates to a method and respective component and system for monitoring the availability of a system function when a change in the state of a component of the system has taken place or is intended.

Description of the Related Art

[0002] Previously, digital switching system (e.g., the systems EWSD and EWSX from Siemens AG) contained no function which monitored particular functionalities distributed over a large number of hardware (HW) units (platforms). This created the following technical problems:

[0003] If HW units were no longer active on account of errors (Hardware HW or software SW), the operator himself had to deduce which functionalities of the system had been lost.

[0004] Routine tests on HW units meant that there was the possibility that particular functionalities were no longer available, since HW units were automatically disconnected during routine tests.

[0005] An operator was able to deactivate HW units without receiving any indication of which functionalities of the system would be lost as a result of the deactivation.

[0006] Of the problems indicated above, only the first has been partially solved:

[0007] Detection of whether a particular functionality is not available in the system was provided exclusively during the startup phase (in EWSD: adjudgement of #7 total failure).

[0008] Upon adjudgement of #7 total failure, initiation of a recovery escalation.

Drawbacks of this solution:

[0009] During normal operation, there is, to date, no direct adjudgement of or monitoring for loss of an important system function.

[0010] There is also no predictive assessment of whether a fundamental system function will be lost on account of an HW configuration.

SUMMARY OF THE INVENTION

[0011] The invention is based on the object of overcoming the aforementioned drawbacks.

[0012] This object is achieved by a method of monitoring for availability of a system function in a computer system, comprising the steps of storing, in a database of said computer system, for a system function monitored for availability, respective information which describes conditions under which said availability of a system function are to be assessed as existing or no longer existing; and utilizing said information, when a change in a state of a component of said computer system has taken place or is intended to take place, to assess whether said change that has taken place results, or said change that is intended to take place would result, in a change in terms of the availability of said system function.

[0013] According to the invention, an arbitrary system functionality indicated by the network operator is mapped in the database using the data types and the loading types of the HW units. The mapped data are provided with a functional state, are maintained and are assessed on the basis of the system state (including predictively).

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The invention in explained in more detail below with reference to the drawings.

[0015] Figure 1 is a block diagram showing a general association between data types and HW units; and

[0016] Figure 2 is a data structure diagram illustrating data types that may be available on various HW units MP-Dep.

[0017] Figure 3 is a block diagram of software for monitoring for availability of a system function in a computer system, using data illustrated in Figure 1.

[0018] Figure 4 is a block diagram of illustrating an exemplary embodiment of a computer system for monitoring for availability of a system function.

DETAILED DESCRIPTION OF THE INVENTION

[0019] Figures 1, 3 and 4 illustrates the entire system having a functionalities in subsystem 1 (with data types A and B) and subsystem 2 (with data types C and D). Platform x is shown having both data types A and B, and platforms y and z having only data type A and B respectively.

[0020] The following (operator-related) data types exist on the systems EWSD and EWSX:

[0021] CALLP (Data for call processing operations)

[0022] CM (Data for call processing operations)

[0023] SLT (Data for #7 signaling and other signaling types)

[0024] SM (Data for #7 signaling)

[0025] PNNI (Data for private networks)

[0026] MN (Data for mobile radio)

[0027] PD (Data for mobile radio)

[0028] LIC (Data for a line termination)

[0029] Examples are illustrated in Figure 2.

[0030] In addition to the data types mentioned, the loading type of an HW unit determines whether or not this HW unit is relevant in the context of total failure. Thus, by way of example, the data type SLT is used on the basis of its loading type, i.e., all MP-Deps having the data type SLT hold the same data. The loading type is used to decide which processes ultimately access these data and process them.

[0031] The combination of data type and loading type stipulates what functionality is provided by a particular HW unit. Thus, an MP-Dep having the data type SLT may or may not be relevant to #7 signaling, depending on the loading type. To illustrate more simplistically, the designation #7-SLT is used below when the loading type of the MP-Dep means that it is relevant to #7 signaling. Otherwise, just the designation SLT is used.

[0032] If, by way of example, the system functions "call processing" and "#7 signaling" have now been assessed as being relevant in the context of total failure, the check on the availability of the call processing functionality needs to be assured of the availability of at least one MP-Dep from the seat [MP-Dep 1x and MP-Dep 2x] in the example in Figure 2. For the #7 functionality, the MP-Deps 1x, 2x and the MP-Dep 40 need to be checked.

[0033] Since the network operator would usually wish to define the instant at which system functions are to be assessed as relevant to failure, the aforementioned check must be of flexible design. This is achieved as follows:

[0034] The components (HW units) of the system are mapped in the database,

[0035] for a mapped component, a respective record is made of whether, on the basis of its data and loading type, this component is necessary for one or more system functions which are relevant in the context of failure (the details required for making the aforementioned record can be prescribed by a network operator, for example),

[0036] for a component mapped in this way, an additional record is made of the instant (e.g., during startup, after startup, or at any time) at which this component is necessary (the details required for making the aforementioned record can likewise be prescribed by a network operator),

[0037] for each system function, the minimum number of the mapped components which are needed to maintain this very system function is also stipulated,

[0038] for a mapped component, its respective (functional) state is also recorded, i.e., whether or not it is active,

[0039] this state (active/not active) is maintained by the maintenance SW already existing for this purpose,

[0040] any change in a state is reported to a total failure detection unit,

[0041] in this context, this report may be sent before or after a change in a state,

[0042] if this report is sent before the change in a state (e.g., if an operator wants to deactivate components, e.g., HW units, or if a routine test is to be carried out), the total failure detection unit assesses whether deactivating a particular component would result in a particular system function being lost, and notifies the report originator (e.g., maintenance SW, etc.) of this fact,

[0043] if this message is sent after the change in a state (e.g., when a component fails), the total failure detection unit assesses whether deactivation of a unit has caused a particular system function to be lost. The result of this assessment is forwarded to the report originator (e.g., protective SW),

[0044] the report originator can now react in the manner which it deems appropriate (alarm, rejection of the operator order, rejection of the routine test (which would result in the unit being disconnected), repetition of startup, etc.).

[0045] The above-described method and component are illustrative of the principles of the present invention. Numerous modifications and adaptations will be readily apparent to those skilled in this art without departing from the spirit and scope of the present invention.